tuned filter 290 can deliver sufficient feedback to put the laser in the "strong feedback" regime. The vernier tuned filter includes in this embodiment, grid generator 246 and the channel selector, e.g., interference filter/etalon 252. The external cavity laser also includes lens 242, channel tuner 254, grid control 248, base 260, output coupling optics 212, and fiber optic 206. The laser amplifier 224 in the embodiment shown is a laser diode. --

IN THE CLAIMS:

Please cancel Claims 1-32 and add new Claims 33-58.

33. (New) A tunable filter to tune an optical beam to channels each discrete from one another and each centered on a corresponding wavelength of a selected wavelength grid; and said tunable filter comprising:

- a grid generator for positioning in an optical path of the optical beam to generate a first set of transmission peaks substantially aligned with the corresponding channels of the selected wavelength grid; and
- a channel selector for positioning in the optical path of the optical beam to select channels to which to tune the optical beam by generation and vernier tuning of a second set of transmission peaks within the wavelength grid with the first set of transmission peaks.

34. (New) The tunable filter of Claim 33, wherein said channel selector effects a tuning range for the second set of transmission peaks substantially equal to one channel spacing within the wavelength grid thereby to vernier tune to selected channels throughout the entire selected wavelength grid.

35. (New) The tunable filter of Claim 33, wherein the channel selector selects one of: discrete channels throughout the wavelength grid and subsets of the channels throughout the wavelength grid.

36. (New) The tunable filter of Claim 35, wherein the subsets of the channels includes a subset of odd channels and a subset of even channels.

37. (New) The tunable filter of Claim 33, wherein said grid generator exhibits a first optical path length determinative of a first free spectral range substantially corresponding to a spacing between adjacent gridlines of the selected wavelength grid.

38. (New) The tunable filter of Claim 37, wherein said channel selector exhibits a second tunable optical path length determinative of a second tunable free spectral range which differs from the first free spectral range of said grid generator by an amount substantially corresponding with plus and minus the quotient of the first free spectral range divided by the number of channels of the selected wavelength grid.

39. (New) The tunable filter of Claim 37, wherein the second free spectral range of said channel selector differs from the first free spectral range of said grid generator by an amount substantially corresponding with plus and minus the quotient of the first free spectral range divided by a subset of the number of channels of the selected wavelength grid.

40. (New) The tunable filter of Claim 33, wherein the combined transmissions of said channel selector and said grid generator substantially attenuate all channels except the selected channels within the selected wavelength grid.

41. (New) The tunable filter of Claim 33, further comprising:

- a first optical circulator with at least a first port, a second port and a third port and an optical beam entering the first port exiting the second port, and the optical beam entering

the second port exiting the third port;

- a second optical circulator with at least the first port, the second port and the third port and the optical beam entering the first port exiting the second port, and the optical beam entering the second port exiting the third port; and

said gain medium together with said channel selector optically coupled to the second port of said first optical circulator and the first port of said second optical circulator to select channels to circulate between the second port of said first optical circulator and the first port of said second optical circulator.

42. (New) The tunable filter of Claim 33, further comprising:

- a gain medium to emit the optical beam along the optical path, and said gain medium capable of accepting optical feedback to operate as a laser said grid generator together with said channel selector positioned in the optical path of the optical beam to select wavelengths at which to provide feedback to said gain medium.

43. (New) The tunable filter of Claim 33, further comprising:

- a gain medium to emit the optical beam along the optical path, and said gain medium capable of accepting optical feedback to operate as a laser and said gain medium including opposing facets with sufficient reflectivity to serve as a selected one of said grid generator and said channel selector.

44. (New) The tunable filter of Claim 33, further comprising:

- an error detector configured to measure a difference in input and output energy levels of the optical beam passing through at least one of said grid detector and said channel selector and to provide an error signal output corresponding to the difference to allow wavelength locking to the selected channels of an optical source responsive to the error signal.

45. (New) The tunable filter of Claim 33, wher in said grid generator and said channel selector further comprise at l ast one of a Fabry-Perot filter, a diffraction element, an interference element, a birefringent element, and a gain medium.

46. (New) The tunable filter of Claim 33, wherein said channel selector includes at least one of: a Pockels cell, a Kerr cell, a solid etalon, a gap etalon, a wedge-shaped solid etalon, a wedge-shaped gas etalon.

47. (New) The tunable filter of Claim 33, wherein said channel selector includes at least one of a tunable length and a tunable index of refraction.

48. (New) The tunable filter of Claim 33, wherein the vernier tuning of said channel selector is effected by a selected one of: a mechanical actuator; a thermal actuator, an electro-optical actuator, and a pressure actuator to vernier tune the second set of tunable periodic transmission peaks.

47. (New) The tunable filter of Claim 33, wherein said channel selector comprises:

- a gas spaced etalon tunable by means of tuning a pressure of a gas within the etalon to vary an optical path length thereof.

48. (New) The tunable filter of Claim 33, wherein said channel selector comprises:

- an etalon electrically tunable in response to an applied electric field to vary an optical path length thereof.

49. (New) The tunable filter of Claim 33, wherein said channel selector further comprises:

- an etalon thermally tunable in response to an applied thermal energy to vary an optical path length thereof.

50. (New) The tunable filter of Claim 33, wherein said channel selector further comprises:

- a semiconductor element with a tunable index of refraction responsive to the applied electric field or current to vary an optical path length thereof.

51. (New) The tunable filter of Claim 33, wherein said channel selector further comprises:

- a grating; and
- an actuator for varying an angle between said grating with respect to an optical path of the beam to tune the beam to a selected channels of the wavelength grid.

52. (New) The tunable filter of Claim 33, wherein said grid generator further comprises:

- an Etalon; and
- a thermal controller to control a temperature of said Etalon to maintain the first selected optical path length.

53. (New) A method for tuning an optical beam to channels each discrete from one another and each centered on a corresponding wavelength of a selected wavelength grid, and the method for tuning an optical beam comprising the acts of:

- filtering the optical beam to generate a first set of pass bands substantially aligned with the corresponding channels of the selected wavelength grid; and
- filtering the optical beam to generate a second set of pass bands within the wavelength grid; and

- vernier tuning the s cond set of pass bands with the first set of pass bands to select channels at which to tune the optical beam.

54. (New) The method of Claim 53, wherein the vernier tuning act further comprises the act of:

- adjusting the second set of pass bands across a range substantially equal to one channel spacing within the wavelength grid to vernier tune channels throughout the selected wavelength grid.

55. (New) The method of Claim 53, wherein the vernier tuning act further comprises the act of:

- selecting either subsets of the channels throughout the wavelength grid or discrete channels throughout the wavelength grid.

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56. (New) The method of Claim 53, wherein the act of filtering the optical beam to generate a first set of pass bands further comprises the act of:

- generating a first interference within the optical beam with a first free spectral range substantially corresponding to the selected wavelength grid.

57. (New) The method of Claim 53, wherein the act of filtering the optical beam to generate a second set of pass bands further comprises the act of:

- generating a second interference within the optical beam with a second free spectral range which differs from the first free spectral range by an amount substantially corresponding with plus and minus the quotient of the first free spectral range divided by the number of channels of the selected wavelength grid.